Appeal In The Matter Of Department Permits L-24572-24-C-N, L-24572-TF-D-N, L-24572-IW-E-N, L-24572-24-F-N and L 24572-TF-G-N // Approval for Oakfield Wind Project Expansion

• Licensee Exhibit I

Licensee's October 21, 2011 Response to IFW Comments



October 21, 2011

Subject:

Response to Maine Department of Inland Fisheries and Wildlife September 28, 2011, Comments Regarding the Amendment Applications for the Oakfield Wind Project. DEP # L-24572-24-E-A

Comments were received from Mark Caron of the Enfield Office and Rich Hoppe of the Ashland Office.

ENFIELD OFFICE:

I. Comment: Deer Wintering Areas

This comment reviewed the number and nature of the DWA's crossed by the transmission line, noting the mitigation measures being taken at four of the DWAs (Reed North, Reed South, Macwahoc, T3R3 South).

Response:

Comments noted.

II. Comment: Vernal Pools

Based on the review of the vernal pool forms submitted for this project, there are 11 Significant Vernal Pools present within the area delineated as the project footprint. Project impacts to 3 of those SVPs (100CFM_N, 09TT_N, 10TT_N) would be completely avoided by the Applicant's proposal to redirect the transmission line footprint outside the 250' upland zone. Project impacts to another 7 SVPs (07TT_N, 24-1MA_N, 62AA_N, 59AA_N, 23DD_N, 65AA_N, 46ED_N) would be avoided or minimized by the Applicant's proposal to employ taller poles allowing lines to span capable vegetation (~50 foot clearance) and eliminating the need to clear vegetation beyond a few taller trees for safety, etc. The remaining Significant Vernal Pool (19BE_N) [which was omitted from both the Vernal Pool Table C-1 and Resource Maps (#14) in Appendix 7-1, as well as the Civil Engineering Maps (Page 24) but does appear on the Road Access Maps (AR-10)] is adjacent to an existing woods road that will be improved for permanent access. However, it does not appear the pool itself will be directly impacted and clearing in the upland zone will be minimal. In total, impact of clearing and change of use to this pool appear to be less than the allowable 25% of the SVP polygon. This should be confirmed with the applicant.

Response:

The last referenced SVP, 19BE-N, is located adjacent to an existing road that will be used as a permanent access road to the transmission line. That existing road will be improved within the 250-foot critical terrestrial habitat of this SVP by installation of a stone mattress roadway sub-

base on top of the existing road surface and limited roadside clearing of vegetation as shown on Exhibit 2, Figure AR-10 of the Maine GenLead application. The existing road and cleared area total 6.8 percent of the SVP buffer.

III. Comment: River Crossings

The potential presence of state listed species was noted for the Penobscot River, Molunkus Stream, Macwahoc Stream, Wytopitloc Stream, West Branch Mattawamkeag River, and the East Branch Mattawamkeag River. The office recommended that, wherever possible, the project follow DEP's draft Minimum Performance Standards for Electric Utility Corridors.

Response:

No new temporary or permanent crossing of any of the noted rivers or streams will be created during project construction or operation. The Penobscot River and East and West Branches of the Mattawamkeag River have 100-foot buffers that are selectively cut to retain vegetation. Structures are placed to allow for maximum vegetation retention, and there is no herbicide use in the 100-foot buffer. Molunkus, Macwahoc and Wytopitloc Streams have 25-foot buffers and limited clearing within 100 feet of the stream, with no herbicide use or structures in the 25-foot buffers.

IV. Comment: Rare Animal Form

The office requested a Rare Animal Form be filled out and submitted for the dead wood turtle found on Babcock Road.

Response:

A Rare Animal Form will be prepared and submitted before November 1.

V. Comment: Mitigation and Compensation

The office commented that IFW is supportive of the mitigation parcel in Drew Plantation and noted that the due diligence requirements must be met to the satisfaction of IFW.

Response:

Comment noted.

ASHLAND OFFICE:

VI. Comment: Pre-construction studies

Due to changes since project was initiated two years ago (size of turbines, turbine pad size, turbine locations, road widths, and some road locations) additional questions, comments, and recommendations need to be addressed.

The applicant's pre-construction studies for wind power projects are consistent with other preconstruction studies conducted for wind power projects MDIFW has reviewed in Maine. Although the appropriate studies may have been completed for prior Oakfield wind project in 2008, there needs to be further interpretation of results pertaining to the change in height of new Vesta turbines and how these new heights and increased rotor swept zones may have changed calculations and potential impacts to birds, bats, and raptor observations.

MDIFW requests these new calculations with maps indicating new height and potential effect on birds, bats, and raptors within rotor swept zone.

If not already on maps, MDIFW would request new road locations, and new road widths.

Response:

Due to the increased turbine height, further interpretations of the results of 2008 studies were completed and submitted under Section 7, Appendix 7-7, of the MDEP NRPA/Site Location of Development Combined Application for the Oakfield Wind Project Amendment. The spring 2008 raptor survey results did not change. Fall 2008 raptor survey results included an additional observation of a merlin within the project area, increasing the total number of raptor observations in the project area flying below turbine height from 36 to 37, which increased the percent below turbine height by 2 percent. The percent of passerines flying below turbine height as observed with nocturnal radar surveys increased by 5 percent in spring and fall as a result of increased turbine height. Because the pre-construction survey results did not change significantly with an increase in turbine height, our conclusion of collision risk to birds and bats did not change and is expected to be similar to other projects in the state.

To date, no established relationship between radar passage rates and the prediction of the number of fatalities that will be found during post-construction mortality surveys has been quantitatively established. Pre-construction radar data and post-construction radar data and fatality search data from a subset of turbines are available from a recent study at Stetson Mountain I. The post-construction radar survey documented similar passage rates and flight heights as those documented during pre-construction surveys, from the same survey location (Stantec 2010). Mortality searches were conducted on mornings following nights when radar data were collected at the site. Out of 18 nights of radar surveys, followed by turbine searches each morning, only 2 dead warblers that were believed to have collided the previous night during radar monitoring were found, both on the same morning. No mortality was observed at the subset of search turbines included in the radar study on mornings following 17 of the 18 nights of radar surveys. Across the whole project, there were no fatalities found during searches following nights with the highest documented passage rates, and the highest numbers of fatalities were found after nights with some of the lowest documented passage rates (Stantec 2010).

VII. Comment: Recommendations to Reduce Bat Mortality

Recent studies (Arnett et al. 2009 & 2010, Baerwald et al. 2008) at operating wind facilities have indicated that increasing the cut-in speed (the wind speed at wind the turbine is allowed to begin rotating) for operating turbines to 5.0 meters per second has significantly decreased turbine caused fatalities for bats. Therefore, in order to minimize risk of mortality to bats MDIFW recommends that operational control measures be established for the Evergreen Wind Power Project in Oakfield/T4 R3 WELS. These measures should be employed from April 20th through October 15th, such that the applicant set the turbine cut-in speed to 5.0 m/s starting at one-half hour before sunset to one-half hour after sunrise. During this time frame when the wind speed is less than the 5.0 m/s threshold, turbine blades are not allowed to rotate thus reducing risk of fatality for bats. If at any point during this time period the wind speed increases to > 5.0 m/s the turbine blades are free to rotate. These curtailment measures are intended to be in place from day one of operation for the life of the project. They are not intended to be reactionary mitigation triggered by some threshold based on pre or post-construction studies. MDIFW would consider not requiring post-construction bat mortality studies with the curtailment recommendations in

place; however we are still requiring post-construction mortality surveys for birds. I have included full citations for the above references:

Arnett, E. B., M. P. Huso, M. R. Schirmacher, and J. P. Hayes. 2010. Altering turbine speed reduces bat mortality at wind-energy facilities. Frontiers in Ecology and the Environment.: 101101071900096 DOI: 10.1890/100103.

Arnett, E. B., M. R. Schirmacher, M. P. Huso, and J. P. Hayes. 2009. Effectiveness of changing wind turbine cut-in speed to reduce bat fatalities at wind facilities. An annual report submitted to the Bats and Wind Energy Cooperative. Bat Conservation International. Austin, Texas, USA.

Baerwald, E. F., J. Edworthy, M. Holder, and R. M. R. Barclay. 2009. A Large-scale mitigation experiment to reduce bat fatalities at wind energy facilities. Journal of Wildlife Management 73:1077-1081.

Response:

In Appendix 7-9 of the MDEP NRPA/Site Location of Development Combined Application for the Oakfield Wind Project Amendment, Evergreen II stated its commitment to monitor bird and bat impacts at the Revised Oakfield Wind Project (Oakfield Project) and work with MDIFW and USFWS to refine the Post-Construction Monitoring Plan (PCM Plan) as new information becomes available. This protocol is based on the rapidly evolving methods associated with post-construction assessment, including the most recent efforts at Mars Hill, Stetson, and Kibby, and will continue to evolve in consultation with MDIFW and USFWS. Post-construction monitoring is planned to occur for 3 years within a 5-year period following construction of the project.

A review of existing bat mortality data is important to evaluate MDIFW's recommendation for curtailment. To date, the earliest bat fatality documented at three operational projects in Maine (Mars Hill, Stetson I, and Stetson II) with publicly available post-construction monitoring results occurred at the Mars Hill Wind Project on May 13, 2007. This has been the only bat fatality documented in Maine prior to June, with the greatest mortality occurring in August (see Figure 1 below and Attachment A, Table 1). As such, we believe that implementing operational control measures prior to June is unwarranted given the costs to the project and the very limited potential benefit in reducing bat mortality. Furthermore, the studies referenced in MDIFW's comment only implemented operational control measures during the period known to encompass the peak in bat fatalities at other operational wind projects (July through September, usually 80% of bats found at a project have been killed during this time frame). The Arnett, et al., 2009 and 2010 studies occurred from late July to early October, and the Baerwald, et al., 2009 study occurred from mid-July to late September.

It is important to recognize that the Baerwald study was conducted at a project in Alberta, Canada, in an area of extensive agricultural fields that is substantially different than the forested ridgelines of the Arnett, et al., studies and the Oakfield Project. Furthermore, these studies investigated two different turbine types; the Arnett, et al., study was conducted at GE 1.5-MW turbines (77-m rotor diameter and 80-m hub height), and the Baerwald study was conducted at 1.8-MW Vestas turbines (80-m rotor diameter and 65-m hub height). However, consistent with the proposal described below for the Oakfield Project, both the Baerwald and Arnett studies were conducted at approximately 50 percent of the overall number of turbines at each project. Although the Baerwald study found positive results that support operational control measures as a potential mitigation technique, they said further studies are needed to assess the costs and benefits at other locations. The authors also firmly cautioned against applying their findings to

areas outside of the agricultural fields of Alberta and to different turbine configurations, suggesting instead that further monitoring be conducted at specific sites.

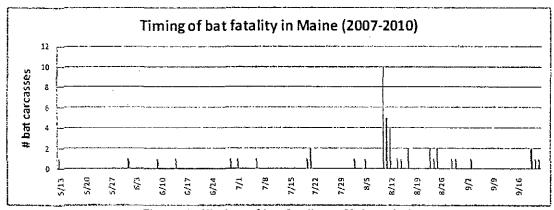


Figure 1. Timing of bat fatality at Maine wind projects

The largest amount of publicly available post-construction monitoring in the northeast has been collected in Pennsylvania between 2007 and 2009, comprising standardized daily surveys between April 1 and November 15 at a total of 8 operational wind projects. During these 3 consecutive years, bat mortality was consistently highest in July, August, and September, with 86 percent of total bat mortality documented between June and September (Pennsylvania Game Commission 2011). Although many factors likely influence mortality rates, the fall migratory period stands out as the primary period of high risk for bat mortality across numerous post-construction surveys in the eastern United States. Long-distance migratory bat species have also consistently comprised the majority of bat fatalities, and activity of these species is greatest in Maine during August and September according to acoustic survey data collected across a wide range of locations (Stantec unpublished data).

Acoustic bat survey results from the Oakfield Project further support the proposal to implement operational control measures from June through September, rather than April through October as MDIFW suggests. The timing of bat activity as observed during the acoustic bat surveys conducted at the site coincides with the timing of peak bat fatalities observed at wind projects in Maine, as well as the peak period surveyed and identified in the studies referenced in MDIFW's comment above. Pre-construction acoustic bat activity peaked at the Oakfield Project in early July and declined markedly by the end of September (see Figures 3-1 and 3-2 of Appendix 7-5 and Figure 2-1 of Appendix 7-4 of the Project's Application).

In response to MDIFW's concern regarding potential bat mortality, Evergreen II will implement partial operational control measures at the Oakfield Project during the first two years of operation to study the effects of curtailment on bat mortality in a northern Maine setting. This will include operational control measures at half (25 Turbines) of the turbines in the Project at a cut-in speed of 5 m/s. The other half of the turbines will be allowed to operate at normal cut-in speeds so that a control can be established to determine the effectiveness of these minimization measures for a project in northern Maine, a state where bat mortality due to wind turbines is documented to be low. Because effectiveness of increased cut-in speeds has not yet been demonstrated or quantified in Maine, it is important for early studies to include a comparison of control and treatments.

Operational control measures will be implemented as noted from June through September. This period is one month prior and one month subsequent to the peak period of bat fatalities (July through August) as observed at operational wind projects in Maine and the northeast. Operational control measures will occur during night hours when bats are active (roughly 0.5 hour after sunset until sunrise) and when wind speeds as measured at turbine nacelles are less than 5 m/s. Operational controls will also be limited to times when temperatures are above 50 degrees Fahrenheit during June and July, and limited to times when temperatures are above 32 degrees during August through October. The reason for implementing operational control measures on nights when temperatures are above 50 degrees only during June and July is because foraging bats are not expected to be active on colder nights during the summer (i.e., when insect prey abundance is lower). During August through October, when bats are likely migrating, colder temperatures may not limit activity, so control measures will be implemented on all nights with above freezing temperatures.

If operational control measures prove to significantly reduce bat mortality (i.e., if bat mortality is lower at turbines with 5 m/s cut-in speeds as evidenced by statistically significant comparisons of mortality rates between these turbines and control turbines), Evergreen II will implement operational control measures based on the first two years of testing according to the weather and timing conditions described above at all turbines for the life of the project. This approach is consistent with the results of the Baerwald and Arnett studies and supports the recommendation for further monitoring and testing to assess the costs and benefits of such a program at other locations outside of Alberta. Similar to the PCM Plan, Evergreen II will work with MDIFW and USFWS to refine operational control measures as new information becomes available, prior to implementation.

The proposed operational control measures described above are based on the best information available, including the timing of bat fatalities at operational projects in Maine and the northeast, as well as the studies referenced in MDIFW's comment above.

VIII. Comment: MDIFW Recommendation Concerning Turbine Pad Design and Post Construction Surveys

Due to the increase in turbine pad size and impacting an area significantly larger for post construction surveys, MDIFW would like to suggest changes in the design of pad. From my own personal experience during bird post-construction surveys the visibility of observer/surveyor to pick out dead birds, bats, or particulates becomes increasing more difficult through the Spring, Summer, and Fall as the grass continually grows from the herbaceous seed mix placed under each turbine after construction. The ability of the observer to find these birds or bats is hindered by the grass obstructing the animal which skews the data on potential bird/bat mortality under each turbine. IFW would recommend placement of rock aggregate for each pad, which enables easy walking for search but does not easily allow birds and bats to fall in between larger cracks. The ability for the observer/surveyor to find birds and bats only strengthens the data set and allows for better search efficiency. If applicant is reluctant to do this for each turbine pad I would suggest they try it on a sub-set to see if there is a difference in observing birds/bat with pads having herbaceous cover compared to pads not having herbaceous cover.

I realize over time seeds will germinate between the rocks but in order to prevent this an engineer could place geo-tex cloth on pad prior to rock aggregate to prevent seed germination.

Response:

Although keeping turbine pads free of vegetation by not re-seeding after construction may help increase searcher efficiency, we do not believe that this is appropriate. Searcher efficiency trials and scavenger removal trials are built into the PCM Plan to account for the variables that influence the observer's ability to find dead birds and bats, including vegetation cover. While it may help searcher efficiency by not re-vegetating the turbine pads, it could increase scavenger removal rates because bird and bat carcasses would be more easily observed by vision-based scavengers. Many of the post-construction projects in Maine and New York have documented larger birds such as ravens and crows as dominant scavenger species of bird and bat carcasses (Stantec 2009a, 2009b, 2010a, and 2010b). Furthermore, by not vegetating, the impervious area of the project is increased, the potential for erosion and phosphorus runoff is increased, and the area of permanent habitat loss increases.

IX. Comment: MDIFW Recommendations for Heron Rookery in T4R3 WELS

This colony has been active in recent years, but I do not believe this will be an issue being 0.6 miles from nearest proposed turbine as long as other construction (i.e., roads) are no closer than 1/4 mile. Within 0.25 mi, I would suggest avoiding construction activities during 1 Apr thru 15 Aug. Within 2.5 miles, protection of wetlands used for foraging may be critical, so suggest adopting practices that protect water quality, limit erosion, and protect upland vegetation within 75 ft of wetland edges.

Response:

The closest point of construction to the heron rookery (#726) is 0.48 mile (See Attachment B). This distance was based on the clearing limit around turbine S15, which is 0.48 mile northeast of the rookery. A map of its location is attached as Attachment B. No construction activity will occur within 0.25 mile of the rookery.

X. Comment: Vernal Pools

Based on review of the vernal pool forms submitted for this project, there are 6 Significant Vernal Pools present within the area delineated as the project footprint. Three of those SVPs (29ED_N, 36MA_N, 04CF_N), including their 250 foot upland zones, appear to be completely outside the footprint of project impacts. The remaining three SVPs appear to be impacted to some degree by clearing for turbine pads or access roads:

- 1) 30ED_N: clearing for turbine pad E06 just clips the edge of the upland zone (4% according to 8/23/11 email from Brook Barnes).
- 2) 19SM_N: proposed access road runs through the 250 foot upland zone (<25%: no % figures provided by Stantec; not addressed on Impact Maps accompanying permit application).
- 3) 34MA_N: proposed access road runs through the 250 foot upland zone (<25%; no % figures provided by Stantec; not addressed on Impact Maps accompanying permit application).

While it appears that impacts to all six of these SVPs will be less than 25% of the land owned/controlled by the applicant, IFW requests that the applicant clarify the specifics for each SVP in a table. At a minimum, the Applicant is requested to provide calculations for existing and proposed percent clearing/impacts, including all permanent, non-forested project footprints (e.g., clearings, roads, including cleared shoulders/verges). The footprint of all existing forestry roads (including verges) that will be used to access and maintain the industrial wind facility should be included in the calculation of percent post-construction impacts. An additional concern for vernal pools (and potentially other wildlife resources) is the Applicant's failure to document SVPs occurring outside the delineated report boundary but whose upland zones fall within 250 feet of a project impact. As currently defined, the project boundary does not sufficiently buffer

the outside edge of all existing or proposed development impacts to ensure that all resources of concern within 250' of a project activity are considered in the review. In many instances, the project delineation boundary is much less than 250 feet from a project impact (e.g., only a 200 foot corridor was surveyed along proposed collector corridors, only 75 feet was surveyed on each side of proposed access roads). This same situation occurred during a recent review of the Bull Hill Windpower Project application, so Stantec (Dale Knapp) should be familiar with this issue and the options we discussed to resolve it (see Item 4 in attached email correspondence below). Without additional information from the Applicant resolving this survey deficit, MDIFW may be unable to complete its review of potential impacts to Significant Vernal Pools or other wildlife resources present outside the current project boundary buffers.

Response:

There are six SVPs mapped within the project area, and one PSVP. Three of these SVPs (29ED_N, 36MA_N, 04CF_N) are completely outside of the project footprint; therefore, the 250-foot critical habitat associated with these 3 pools will not be altered by the project.

MDIFW states that the 3 remaining SVPs (19SM_N, 34MA_N, 30ED_N) "appear to be impacted" by the project. It is correct that SVP30ED-N will impact 4 percent of the SVP habitat. However, the road referenced in the comments regarding 19SM-N and 34MA-N is an existing road, not a proposed road. As part of the compensation for this project, the existing road will be abandoned and revegetated, restoring habitat within the SVP. Figure 2, below, shows a snapshot of the restoration area is from Exhibit 1, Sheet C-S1.12 of the civil design. The dark area is an undisturbed stormwater buffer.

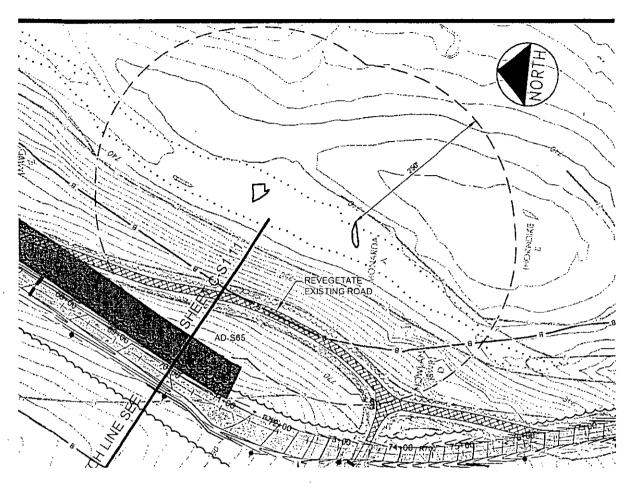


Figure 2. Snapshot of the existing road in SVP habitat for 19SM-N and 34MA-N that is to be revegetated.

MDIFW requested a table with detailed information. Since the impact associated with the SVPs is demonstrated to be zero or well below the 25 percent threshold, the additional information MDIFW is requesting, i.e., calculations of existing conditions, has not been calculated. In response to MDIFW's comments regarding existing forestry roads, our understanding from MDEP is that existing roads that were in place prior to the passing of the Chapter 335 Vernal Pool regulations are not to be included in post-construction impact calculation of an SVP impact.

MDIFW characterizes not searching for SVPs that occur outside of the delineated project boundary as a deficiency in the application. MDIFW contends that all project components should have a minimum of 250 feet surveyed around the entire project footprint. However, the purpose of natural resource surveys and mapping is to identify (and therefore avoid) resources within a defined project area, not an effort to locate all SVPs that may surround a project area. In reference to the collector corridor and access roads, these widths are used to address the area of impact on a project. We believe a 250-foot survey area surrounding existing access roads that would experience minor upgrades or proposed collection corridors is an unreasonable expectation to be placed on the applicant. Such an approach on the collector corridor may require a corridor as wide as 700 feet and access roads as much as 520 feet wide

for a 20 foot road; this additional survey would require a level of effort that is unreasonable based on the existing regulatory framework. As noted above, the area being reviewed under MDEP regulations is the project area as defined in the application.

Attachment A

Table 1. Location, date, and species of bat fatalities found at Maine wind farms 2007 to 2010*				
Location	Year	Species	Season**	Date found
Mars Hill	2007	little brown bat	Spring	5/13
Stetson II	2010	hoary bat	Spring	6/1
Stetson II	2010	hoary bat	Spring	6/9
Stetson II	2010	hoary bat	Spring	6/14
Stetson I	2009	little brown bat	Summer	6/29
Stetson I	2009	big brown bat	Summer	7/1
Stetson II	2010	hoary bat	Summer	7/6
Stetson II	2010	silver-haired bat	Summer	7/20
Stetson II	2010	hoary bat	Summer	7/21
Stetson II	2010	big brown bat	Summer	7/21
Mars Hill	2007	silver-haired bat	Summer	8/2
Mars Hill	2008	red bat	Summer	8/5
Mars Hill	2007	unidentified bat	Summer	8/10
Mars Hill	2007	eastern red bat	Summer	8/10
Mars Hill	2007	unidentified bat	Summer	8/10
Mars Hill	2007	hoary bat	Summer	8/10
Mars Hill	2007	silver-haired bat	Summer	8/10
Mars Hill	2007	hoary bat	Summer	8/10
Mars Hill	2007	hoary bat	Summer	8/10
Mars Hill	2007	silver-haired bat	Summer	8/10
Stetson II	2010	silver-haired bat	Summer	8/10
Stetson II	2010	big brown bat	Summer	8/10
Mars Hill	2007	little brown bat	Summer	8/11
Mars Hill	2007	little brown bat	Summer	8/11
Mars Hill	2007	silver-haired bat	Summer	8/11
Mars Hill	2007	silver-haired bat	Summer	8/11
Mars Hili	2007	hoary bat	Summer	8/11
Mars Hill	2007	silver-haired bat	Summer	8/12
Mars Hill	2007	little brown bat	Summer	8/12
Mars Hill	2007	unidentified bat	Summer	8/12
Mars Hill	2007	silver-haired bat	Summer	8/12
Mars Hill	2007	silver-haired bat	Summer	8/14
Mars Hill	2008	silver-haired bat	Summer	8/15
Stetson I	2009	hoary bat	Fail	8/17
Stetson II	2010	silver-haired bat	Fail	8/17
Mars Hill	2008	red bat	Fall	8/23
Stetson II	2010	silver-haired bat	Fall	8/23
Stetson I	2009	hoary bat	Fall	8/24
Stetson I	2009	silver-haired bat	Fall	8/25
Stetson II	2010	silver-haired bat	Fall	8/25
Mars Hill	2008	hoary bat	Fall	8/29
Stetson II	2010	silver-haired bat	Fall	8/30
Mars Hill	2008	hoary bat	Fall	9/3
Mars Hill	2007	silver-haired bat	Fall	9/20
Mars Hill	2007	hoary bat	Fall	9/20
Mars Hill	2007	eastern red bat	Fall	9/21
Mars Hill	2007	eastern red bat	Fall	9/22

*These numbers represent bats found either during turbine searches or incidentally; numbers are not corrected for searcher or scavenger biases.

Spring: April 15-June 15, Summer: June 16-Aug 15, Fall: Aug 16-October 31

Attachment B

